Question 1

https://twitter.com/davisrichardg/status/634750089878204417 From Richard Davis

https://en.wikipedia.org/wiki/IPv4

http://telescript.denayer.wenk.be/~hcr/cn/idoceo/tcp_header.html

https://code.tutsplus.com/tutorials/http-headers-for-dummies--net-8039

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User enter the URL in the search bar and then the DNS translate the url to ip-address. The DNS uses the available caches to translate the IP. The HTTP at the application layer then send the HTTP request for the object to. The server then send HTTP respond to the client. HTTP initiate the TCP and then the client and server establish the TCP three way handshake. The client send the GET method and recieveing package. This TCP occure at the transport layer. The package at the network layer is organized by IP at network layer. The link layer manage the contact between the wifi and the client with ethernet. The IP address is translated by the NAT into MAC address. Ethernet header consists of Dest. MAC address, Source MAC address, ethernet frame type and length. IP header consists of IP version, IHL, type of service, length of the

packet, identiffication, fragment offset, time to live, protocol, checksum, source address in IP and destination address in IP. The TCP consists of source port and destination port, sequence number and acknowledgment number, data offset, reserved, flag, window size, checksum and urgent pointer. The HTTP consists of method, path, protocol, host, user-agent, accept field, accept language, accept encoding, accept charset, keep alive field and connection field.

○ Question 2
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0010100010101101
1001101001111001
1100001100100110
Checksum is
0011110011011001
The server can use the checksum and add it with the sum above to get
111111111111111
If there is any 0 instead it indicates that there is error

Question 3
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a)

X	X	Outport x
Y	Z	Outport y
Z	Z	Outport z

So we see that we have packet z in outport y, but outport y only accepts packets y. That issue will block the outport y once.

b) we have total 6 packets and 1 of them is blocked, so the number of time will be 6+1.

c) we can get a HOL block many time, for example if have all x packets in outport y, y packets in outport z and so on.

○ Question 4

Step	N'	D(v), p(v)	D(w), p(w)	D(x), p(x)	D(y), p(y)	D(z), p(z)
0	u	4, u	6, u	**1, u**	-	-
1	ux	**3, x**	3, x		3, x	-
2	uxv		**3, x**		3, x	-
3	uxvw				**3, x**	5, w
4	uxvwy					**5, y**
5	uxvwyz					

○ Question 5

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a) IP source: 111.111.111.111

IP destination: 222.222.222.222

MAC source: 29-74-9C-55-FF-E8

MAC destination: BD-49-C7-D2-2A-56

b) IP source: 111.111.111.110

IP destination: 111.111.111.111

MAC source: 4B-E9-17-00-BB-E6

MAC destination: 29-74-9C-55-FF-E8

c) The client A uses ARP to broadcast request to all adjacent client connected to the same switch. If there is not the desired address the router will then broadcast again at another switch. At this switch the corresponding client will respond.

○ Question 6

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a) the hidden problem means that the signal transmit is interfered by an obstacle from the environment. This makes the one transmitting not be able to give the signal to the

one being blocked.

b)the fading problem means that the signal transmit is weak because of the distance between the one transmitting data. The longer the distance the weaker the signal and the data transfer is slower

○ Question 7

Course book chapter 8

a)the message m is private when it is encrypted.

b)Alice will sign the message m with her private key.

c)Alice will use Bob public to encrypt her private key. The Bob public key is the key that Bob can use his own key to decode Alice key.

d)Alice when she send her message can send a K that she encrypt all the package together. Bob can use his private key and K to obtain K' and if they are not coincide, he knows the data is altered.

○ Question 8

Course material, lab 5

1)Transport layer, socket usually initiated at the transport layer, the udp and tcp use socket and they both are at the transport layer

2)clientsocket, there was a step at the server to read the UDP segment and that segment must have been sent from the client.